Ownership matrix	**USQ # 21-0105-S**

TABLE OF CONTENTS

TABLE OF TABLES

1.0 PURPOSE AND SCOPE

(10.1.4, 10.1.5, 10.1.6, 10.1.7, 10.1.41)

The Tank Operations Contractor (TOC) Worker Safety and Health Program (WSHP) applies to work performed by Washington River Protection Solutions, LLC (WRPS), and subcontractors on the behalf of WRPS, under contract to the U.S. Department of Energy (DOE) - Office of River Protection (ORP) (Contract DE-AC27-08RV14800) at covered workplaces. Through implementation of this program, the TOC provides a place of employment free from recognized hazards that are causing, or have the potential to cause, death or serious physical harm to workers. The purpose of this plan is to describe the methods for compliance with the requirements in 10 CFR 851, "Worker Safety and Health Program," Subpart C, "Specific Program Requirements." (10.1.8)

The TOC is committed to maintaining a requirements implementation matrix (RIM) in TFC-ESHQ-S_SAF-CD-11 as an integral part of the WSHP. The RIM lists each applicable 10 CFR 851 requirement and associated incorporated by reference standards, and the credited corresponding Hanford Site-wide and company-level implementing documents. Requirements that do not apply to the TOC work scope are marked N/A in the RIM. (10.1.2)

The TOC will submit revisions to this plan and TFC-ESHQ-S_SAF-CD-11 to ORP for review and approval prior to implementing a significant change or addition to the program, or when a change in contractors occurs. A significant change would be one that:

- Introduces a new type of hazard (e.g., biological hazards as defined in 10 CFR 851, Appendix A) with a unique set of requirements not currently applicable; (10.1.16)
- Adds a new requirement to 10 CFR 851 (e.g., consensus standards that are not already incorporated by reference in 851.27, or changes in consensus standard edition); or, (10.1.15)
- Otherwise substantially modifies a method of compliance with 10 CFR 851 as outlined in the WSHP (for example, the deletion of a procedure listed in TFC-ESHQ-S_SAF-CD-11 where the requirements of 10 CFR 851 contained therein are not captured in another procedure). (10.1.2)

The TOC will submit an annual letter to ORP in accordance with 10 CFR 851.11(c), prior to the anniversary of the previous approval. (10.1.5)

1.1 Integration of Requirements with Tank Operations Contractor (TOC) Integrated Safety Management System (ISMS) and Safety Regulations

(10.1.5)

Table 1 identifies the key four regulatory drivers and one voluntary process that sets the foundation for an integrated TOC safety program.

Table 1. Integration of Key Safety and Health Program Drivers.

PROGRAM DRIVER	TOC PLAN	IMPLEMENTING DOCUMENT MATRIX
10 CFR 851, "Worker Safety and Health Program" (WSHP)	TFC-PLN-47, "Worker Safety and Health Program"	TFC-ESHQ-S_SAF-CD-11, "Worker Safety and Health Program Requirements Implementation Matrix"
29 CFR 1910.120, "Hazardous Waste Operations and Emergency Response" (HASP)	TFC-PLN-43, "Treatment Storage and Disposal Facility Hazardous Waste Operations"	TFC-ESHQ-FP-STD-13, Fire Protection Requirements for Hazardous Material and Used Waste Absorbing Material Storage
DEAR 970.5223-1, "Integration of Environment, Safety, and Health into Work Planning and Execution" (ISMS)	TFC-PLN-41 "Integrated Safety Management System Description"	TFC-PLN-100, "Tank Operations Requirements Basis Documents"
10 CFR 830, Subpart B, "Safety Basis Requirements" (SMP)	TFC-PLN-32, "Tank Operations Contractor Safety Management Plan"	
"DOE Voluntary Protection Program Manuals" (VPP) Volume I-IV		
MGT-ENG-IP-05, ORP Fire Protection Program	TFC-PLN-13, Fire Protection Program	

TOC has an approved ISMS description (TFC-PLN-41) that is structured to incorporate environment, safety, health, and quality (ESH&Q) into work planning and execution. The TOC meets 10 CFR 830 requirements through an Authorization Basis, which serves as a mechanism to clarify and agree to nuclear Safety Basis and Environmental Regulations. TFC-PLN-100 identifies the implementing documents of both the ISMS and 10 CFR 830 associated Authorization Basis. Both TFC-PLN-100 and TFC-ESHQ-S_SAF-CD-11 share a large amount of common implementing processes. However, the TFC-PLN-100 has a longer list of 29 CFR 1910, "General Industry Regulations," implementing documents due to the nuclear safety basis hazard analysis processes utilizing many of the concepts out of the Process Safety Management Standard (29 CFR 1910,119). The TOC does not have chemicals in the quantities that trigger OSHA's Process Safety Management requirements within the 10 CFR 851 framework.

The TOC has an active VPP, which promotes safety and health excellence through cooperative efforts among labor, management, and government at DOE contractor sites. Key elements of VPP include management leadership and commitment, employee involvement, work site analysis, hazard prevention and control, and safety and health training.

Total ESH&Q integration enables the assigned missions to be efficiently and effectively accomplished while protecting the workers, the public, and the environment. Integration is accomplished at the company, facility, and activity levels.

1.2 Hanford Interfaces

(10.1.5)

At the Hanford Site, the TOC's primary interface is with the ORP. ORP manages the program to retrieve the waste from the tanks, treat the waste for long term storage or disposal, and close the tank farms. There are interfaces with other prime contractors managed by ORP and DOE Richland Operations Office (RL) that are relevant to implementing 10 CFR 851. These interface requirements are described within the TOC prime contract and allow use of common infrastructure and services that represent cost savings for the contractors and the government. The interfaces and common services are integrated into the TOC operations, and formal processes are in place to manage the interfaces and services.

- ORP manages the contract for Wastren Advantage Inc. (Wastren) performs analytical services at the 222-S Laboratory Complex. Wastren performs the analytical services production functions of receiving, handling, analyzing, storing samples, performing special tests, and reporting the results of these analyses and tests to the other contractors of DOE offices at the Hanford Site. The TOC maintains the 222-S facility.

- ORP manages Bechtel National, Inc. (BNI), which has the contract for design, construction, and commissioning of the Hanford Tank Waste Treatment Immobilization Plant. WRPS and BNI are working together on the proposed direct feed of low-activity waste to the Waste Treatment Plant and integrating systems needing to meet 29CFR1910.119, Process Safety Management requirements.

- RL manages the Mission Support Alliance (MSA) with WRPS as a customer for provided services. MSA provides most of the Hanford Site infrastructure and support services activities (e.g., training records support, roads/electricity/water/sewer, emergency management/response, fire system management, site security, nuclear material safeguards and security, payroll/benefits management, pest management, crane and rigging support, meteorological services). The TOC uses the meteorological data provided by MSA for describing conditions during sampling and in implementing the Heat Stress and Cold Stress programs.

- RL manages HPM Corporation (HPMC) Occupational Medical Services, the Site Occupational Medical Contractor (SOMC). The SOMC is responsible for the provision of comprehensive occupational health services for the Hanford Site. The SOMC provides occupational medicine, environmental safety and health, risk communication, health data analysis and trending, health education and promotion, industrial rehabilitation and ergonomics, and behavioral health services.

- RL manages Penser North America, Inc., which manages the Hanford Site's workers' compensation program in accordance with Revised Code of Washington (RCW) Title 51, the Washington Industrial Insurance Act.

1.3 Subcontractors
(10.1.5)

Specific requirements for subcontractors, including safety requirements, are documented in the procurement process. Subcontracts are written and managed within three major categories: 1) products that include materials, supplies, equipment, and commercial items; 2) technical services obtained from subcontractors; and 3) construction services performed by the subcontractor. These subcontracts contain standard provisions and include the Onsite Work Provisions document, which provides direction for safety and health program requirements. Subcontractors performing work at a TOC covered workplace are notified in contract documents that 10 CFR 851 applies to their work scope.

Regardless of the type of contract issued, each element of work is issued to the subcontractor via contract documents. A Buyer's Technical Representative (BTR) and/or cognizant engineer is assigned by the requisitioning organization, activity, or cost account manager to a subcontract to act as the day-to-day technical representative. The primary duty of the BTR/cognizant engineer is to provide technical direction/clarification to the subcontractor to ensure performance of all elements in accordance with the subcontract without placing emphasis on schedule or cost to the detriment of quality, safety, or the environment. The BTR/cognizant engineer is responsible for internal coordination of, and interface with, the subcontractor regarding the various technical requirements, including safety and health requirements. The TOC ESH&Q organizations provide subcontractor management oversight support to the BTR/cognizant engineer by communicating requirements and performing assessments, inspections, and/or surveillances to ensure compliance.

2.0 RIGHTS AND RESPONSIBILITIES
(10.1.8)

2.1 Management and Employee Responsibilities
(10.1.8)

Management and workers at every level are responsible and accountable for understanding and implementing established policies and procedures for safety. Personnel are accountable for their personal safety and the safety of their peers. Several mechanisms are used to communicate and impose personnel accountability. The TOC has formalized the expectations, values, and roles of employee safety awareness and behavior in the TOC's standards, expectations, and training to implement the policy have been provided to TOC employees.

The TOC management is responsible for the safety and health of the workforce. Management is responsible for:

- Establishing the written policy, goals, and objectives for the safety and health program
- Using qualified safety and health staff to direct and manage the program
- Assigning safety and health program responsibilities, evaluates personnel performance, and holds personnel accountable for safety and health performance
- Providing mechanisms to involve workers and their elected representatives in the development of the safety and health program goals, objectives, and performance measures and in the identification and control of hazards in the workplace

- Providing workers with access to information relevant to the worker safety and health program through training, presentations, computer and written media

- Establishing procedures for workers to report, without reprisal, job-related fatalities, injuries, illnesses, incidents, and hazards, and make recommendations about appropriate ways to control those hazards

- Providing response to such reports and recommendations with appropriate promptness to prevent harm

- Providing regular communication with workers about workplace safety and health matters

- Establishing procedures to permit workers to stop work or decline to perform an assigned task because of a reasonable belief that the task poses an imminent risk of death, serious physical harm, or other serious hazard to workers, in circumstances where the workers believe there is insufficient time to utilize normal hazard reporting and abatement procedures

- Informing workers of their rights and responsibilities by appropriate means, including posting the DOE-designated Job Safety and Health "It's the Law!" poster in the workplace where it is accessible to all workers.

All employees are required to individually comply with the safety requirements of the WSHP that are applicable to their actions. This includes obeying signs and postings, following procedures, using prescribed controls, wearing assigned personal protective equipment, and implementing specific work control procedures and practices. Employees have the responsibility to understand the hazards and safety precautions for a task, and to only do work where they have received proper instructions, training, and authorization. It is the responsibility of employees to report all accidents, injuries, or occupational illnesses to their immediate supervisor/manager.

- **Workers** are responsible for participating in activities to ensure their safety and performing work safely. Workers participate in work planning, hazard identification and control, work performance within the controls including feedback and continuous improvement, recognizing unsafe conditions, and stopping work.

- **Field Work Supervisors and Leads** are responsible for directing work activities and managing a safe work environment. Field Work Supervisors and leads participate in work planning, hazard identification and control, work performance within the controls, and feedback and continuous improvement.

- **First Line Managers** are responsible for ensuring that the work environments created by Field Work Supervisors and leads are producing safe results that support and advance company and customer objectives. First line managers also ensure company policies and procedures are effectively implemented. First line managers coordinate resources and work activities with other organizations, provide technical direction according to their qualification, provide direction for work, and report work progress and the quality of performance.

- **Managers** (project, department, technical support) are involved in providing technical direction, resources, planning, reporting, personnel and issue management in support of

specific projects and their areas of responsibility. Managers ensure barriers impacting the safe performance of work are addressed and that activities are within scope and budget, which support established milestones and customer expectations.

- **Senior Managers** are responsible for ensuring that company standards are established and implemented that meet customer expectations for executing work in a safe, proper, and efficient manner. Senior management interfaces with the customer, regulators, stakeholders, Hanford Atomic Metal Trades Council (HAMTC), and the public on company and project matters.

- **The Project Manager** is responsible for the overall management and safe operation and is supported by Senior Management.

2.2 Employee Rights

(10.1.8, 10.1.28)

TOC workers have the right, without reprisal, to:

- Participate in WSHP activities on official time

- Have access to DOE safety and health publications; the company WSHP; the work site standards, controls, and procedures; safety and health posters informing them of relevant rights and responsibilities; their own personal injury/illness and exposure monitoring records; inspection records; and accident investigation records

- Observe monitoring or measuring of hazardous agents

- Be notified when monitoring results indicate they were overexposed to hazardous materials

- Express safety and health concerns

- Have an employee authorized representative accompany DOE officials during the physical inspection of the work site

- Have access to company-provided personal protective equipment, when required

- Decline or stop work if the worker believes there is an imminent danger.

Additionally, WRPS along with the other Hanford contractors, agree it is the employees' responsibility and authority to initiate a Stop Work IMMEDIATELY, without fear of reprisal, when the employee believes a situation exists that places himself/herself, a coworker(s), or the environment in danger or at risk as prescribed in DOE-0343, "Hanford Site Stop Work Procedure."

3.0 HAZARD IDENTIFICATION AND ASSESSMENT
(10.1.9)

The TOC procedures contain provisions for identifying and assessing potential occupational hazards and assessing the risk of associated workers injury and illness. These procedures include methods to:

- Analyze designs of new facilities and modifications to existing facilities and equipment for potential workplace hazards
- Perform routine job activity-level hazard analyses
- Consider interaction between workplace hazards and other hazards such as radiological hazards
- Assess and document worker exposure to chemical, physical, biological, or safety workplace hazards through appropriate workplace monitoring, using recognized exposure assessment and testing methodologies, and using accredited and certified laboratories
- Record observations, testing, and monitoring results
- Review site safety and health experience information.

These hazard identification activities are performed initially to obtain baseline information and are repeated as often as necessary to ensure compliance with the requirements.

3.1 Hazard Identification Methods
(10.1.9)

TOC procedures ensure facility and process hazards are known prior to the start of work. Hazards are identified during a process that typically starts during design for new facilities or modifications and continues throughout the facility life cycle. Procedure and operation document reviews are used to identify hazards that are not subject to design reviews (e.g., procedures for performing maintenance work). Generally, a combination of facility and process hazard analyses are employed to identify and characterize hazards.

1. Activity-level hazards are identified using the Job Hazard Analysis (JHA) process. The Job Hazard Analysis Checklist is a tool developed in cooperation between line management and safety. The JHA identifies potential hazards, controls, and recommended personal protective equipment (PPE) associated with work performed by the TOC workers. Supervisors review the scope of work, list tasks that introduce hazards, walk down the job as required, and use the JHA Checklist to document activity-level hazards and selection of appropriate controls that facilitate safe performance of work. JHAs are revised, as necessary, if conditions change that impact worker safety. The JHA process describes controls to mitigate the hazards and methods of hazard control implementation. Complex work requires more of a team approach in the development and planning phases of work packages and technical procedures. Additional requirements and special controls are included as needed for any special work permits, checklists, or authorizations.

The results of the Job Hazard Analysis may result in the hazard and controls being integrated into one of the following.

- The General Hazard Analysis (GHA) serves as the foundation for describing worker hazards and methods of mitigation for all WRPS workers.
- The Job Hazard Analysis (JHA) Checklist is developed when the activity's hazards are not bounded by the GHA.
- The Standing JHA (SJHA) Checklist is developed when a technical procedure or work activity can be performed in multiple locations where work area and/or location specific hazards exist.
- The GHA Respiratory Protection Form expands the task description and special instructions for hazards requiring respiratory protection equipment.
- The hazard analysis and controls beyond the GHA may also be integrated directly into the procedure or work document.

2. Industrial Hygiene Baseline Hazard Assessments are completed and Industrial Hygienists perform and document initial monitoring and exposure assessments and update this information periodically. Personal samples are analyzed by laboratories accredited by the American Industrial Hygiene Association (AIHA). The methods used for workplace monitoring are based on AIHA, "A Strategy for Assessing and Managing Occupational Exposures," which is describes recognized exposure assessment methodologies. Observations, monitoring results, testing and exposure assessments are recorded, documented, and maintained by procedure.

3. Employee Job Task Analysis (EJTA) is completed for each employee and are utilized by the SOMC for occupational medical qualification and for return to work and Americans with Disabilities Act (ADA) work accommodation determinations. The EJTA is also utilized in the Hanford Worker Eligibility Tool as a method to confirm personnel are trained, qualified, and medically cleared to be assigned to perform work.

4. The TOC has no chemicals in quantities or configurations that trigger the 29 CFR 1910.119, "Process Safety Management," requirements. However, process hazard evaluations are conducted as part of TOC meeting 10 CFR 830, "Nuclear Safety," Safety Management requirements and are summarized in the 281 page report RPP-15188, "Hazard Evaluation Database Report."

   The hazard evaluations incorporate elements of 29 CFR 1910.119, "Process Safety Management;" 40 CFR 68, "Chemical Accident Prevention Provisions." HAZOP, Process Hazard Analysis, or What If evaluation techniques were developed for 96 facility/topics. The evaluations reviewed TOC safety-significant structures, systems and component (SSC) designs, processes, operations, operational experience, change control process, physical modification to the facility, new or modified activities, and new technical information to identify new hazards and to delete or modify those hazards eliminated. Each evaluation included 17 focus areas including: Waste Transfer Leak Accidents, Unplanned Excavation and Drilling Accidents, Filtration Failures Leading to Unfiltered Releases and Occupational Exposure.

5. Other task specific worker safety and health program hazard analyses are conducted and include: Arc Flash Hazard Analysis, Electrical Work Permit, Hanford Confined Space Hazard Identification Form, Hanford Confined Space Entry Permit, Hanford Fall Protection Work Permit, Hanford Fire Marshal Permit, Hanford Fire Marshal Occupancy Permit, Hanford Site Oversize/Overweight permits, Hanford Job Specific Beryllium Work Permit, Hanford Site Excavation Permit, Hot Tap Permit, New Electrical Installation Permit, Non-emergency hydrant tie-in permits Portable Ladder Use Permit, TOC Asbestos Work Permit, TOC Hot Work Permit, TOC Laser User Permit, and others.

6. Other disciplines analyze hazards that augment the worker safety and health program. They include: Emergency Preparedness Hazard Analysis, Fire Hazard Analysis, Chemical Procurement process.

3.2 Safety and Health Experience Review
(10.1.9)

The TOC reviews safety and health experience information to improve on safety performance. Systems are in place to collect and analyze operations and safety performance data. Improvements may be accomplished through resolution of single specific issues, or may involve company level program and process improvements, facility or equipment design changes, or changes to specifications and procedures.

Safety and health program experience review is provided in several forms including input to the Award Fee - Special Emphasis Area 7(b) Safety and Health, Performance Objective Measures and Commitment (POMC), and VPP Annual Report to DOE. Information for the reports are derived from and feedback is provided to workers though the following:

- Work management feedback
- Management assessments
- Independent assessments
- External assessments
- Event investigations/critiques
- Action Requests (ARs)
- Trend analysis
- Peer safety observer program
- Safety communications
- My Safety Focus
- President & Employee Accident Prevention Councils
- Performance indicators
- VPP surveys/assessments
- Occurrence reporting
- Risk management
- Lessons learned
- Organizational all-hands meetings
- Safety meetings
- Safety Startup

PERs are prepared for safety and health issues as required by established procedure. PERs are screened for significance by a standing interdisciplinary committee, and a graded approach is used to determine the degree of causal analysis, extent of condition evaluation, and corrective action required. A formal causal analysis and a corrective action plan are prepared for significant safety issues; the analysis and plan are brought for approval to the Executive Safety Review Board (ESRB), a group of senior executives designated and chaired by the WRPS Project Manager. Progress in resolving significant safety and health issues is tracked by the ESRB, including the effectiveness of completed actions through an end-point assessment.

There are cross-organizational discussions of accidents, occurrences, and PERs with assignment of follow-up actions, as well as status on important mission work elements. The integrated interaction ensures safety and health issues and lessons learned are immediately communicated and addressed uniformly throughout WRPS organizations.

Event investigation teams may be activated to perform investigations into operational emergencies, program issues, abnormal events, and significance-based occurrences (i.e., significant events, injuries/illnesses or conditions that occur in the facility and adversely affect operations, personnel safety, or compliance with DOE requirements). The responsible line organization director may elect to activate an event investigation team to evaluate near misses and other issues with real or potential impact to the ESH&Q of the TOC managed facilities and/or personnel that are directly related to human performance issues.

3.3 Closure Facility Hazards and Controls
(10.1.9)

The TOC facility organization maintains a comprehensive list of facilities. A closure facility is defined as a facility that is non-operational and is, or is expected to be, permanently closed and/or demolished, or title to which is expected to be transferred to another entity for reuse. This does not include cribs or other burial sites. Closure facilities are not routinely accessed. Access is permitted under controlled conditions to ensure hazard identification and control to protect workers. A closure facility hazard means a facility-related condition within a closure facility involving deviations from the technical requirements of the safety and health standards in 10 CFR 851.23 that would require costly and extensive structural/engineering modifications to be in compliance. The TOC will submit to ORP for approval a list of closure facility hazards and the established controls within 90 days of identifying such hazards. The established TOC processes for hazard identification and control are utilized in implementing this requirement.

4.0 HAZARD PREVENTION AND ABATEMENT PROCESS
(10.1.10)

The TOC has established and implemented a hazard prevention and abatement process. This process ensures all identified and potential hazards are prevented or abated in a timely manner. Controls are selected to mitigate or minimize risk of exposure to a hazard.

The hierarchy of controls is:

1. Elimination or substitution of the hazards where feasible and appropriate
2. Engineering controls where feasible and appropriate
3. Work practices and administrative controls that limit worker exposures
4. Personal protective equipment.

Whenever feasible, hazards identified during design reviews are mitigated by substitution or elimination, which are considered part of hierarchy of hazard controls.

For existing hazards or hazards that are introduced by the nature of a task, work is categorized based on exposure risk and complexity as defined in the work control system. Work categorization sets the level of management rigor required for planning and authorizing work. The work control process prioritizes work in accordance with a number of factors including safety and health risks, and known issues from similar work. Controls specific to the hazard and risk are developed during the planning process and incorporated into the governing work control documents and permits. Through use of the established work control system, the TOC:

- Prioritizes and implements abatement actions according to the risk to workers
- Implements interim protective measures pending final abatement
- Protects workers from dangerous safety and health conditions.

As determined by the risk and/or complexity of the work, planning, and procedure development are performed using an integrated team approach. Management ensures that the team includes an appropriate mix of worker expertise and ESH&Q professional support. The team reviews planned work and develops necessary controls for the work hazards. Field work supervisors confirm that designated work controls are included in the work package. A graded approach is used to evaluate the hazards of a proposed work activity and to confirm that controls are in place. This may include a multidisciplinary team walk down, based on complexity. The JHA, along with the controls and work instructions developed for work control documents, are communicated to the work force in a pre-job briefing.

Work permits are used to ensure that identified hazard controls are in place and used when performing work (e.g., excavation permits, asbestos work permits, core drilling/tie-in permits, hotwork permits, energized electrical work permits, confined space permits, Hanford Site oversize/overweight permits, Fire Marshal permits, non-emergency hydrant tie-in permits, and radiological work permits).

The effectiveness of design, engineered, administrative, and personal protective equipment controls are confirmed through exposure monitoring and field observations during performance of work.

The TOC uses the integrated Contractor Assurance System (iCAS) for timely identification and evaluation of discovered conditions and the correction of deficiencies adverse to quality, safety, health, operability, and the environment. It also ensures the adequate documentation and tracking of corrective actions.

4.1 Addressing Hazards During Procurement

(10.1.10)

The TOC has an established procurement process, which considers the hazards when selecting or purchasing equipment, products, and services. The procurement process requires review by safety and health professionals for the procurement of technical (non-administrative) services performed by Hanford, non-Hanford, and general contractors. Two Preliminary Hazard Analyses (PHA 31 and PHA 32) are available, which are dependent on scope and location of the contracted work activity. The supply chain process requires review by safety and health professionals of requisitions and vendor safety and health documents.

5.0 SAFETY AND HEALTH STANDARDS

(10.1.2, 10.1.11, 10.1.15, 10.1.17, 10.1.18, 10.1.19, 10.1.20, 10.1.21, 10.1.22, 10.1.23, 10.1.26, 10.1.27, 10.1.29, 10.1.30, 10.1.31, 10.1.32, 10.1.33, 10.1.34, 10.1.35, 10.1.36, 10.1.37, 10.1.38, 10.1.39, 10.1.40, 10.1.42)

The TOC is responsible for compliance with applicable safety and health standards specified in 10 CFR 851.23 and incorporated by reference in 10 CFR 851.27. Additional specific safety and health requirements may be implemented if the TOC determines these requirements are necessary to protect the safety and health of workers. An example is the development and use of occupational exposure limits for chemicals in tank waste vapors that do not have an

Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit (PEL) or American Conference of Governmental Hygienists (ACGIH[1®]) Threshold Limit Value (TLV®).

The TOC performs work under a procedure-based system that implements safety and health standards. If there is a conflict between the referenced standards, then the more protective standard is employed. An example is some of the respirator assigned protection factors in 29 CFR 1910.134, "Respiratory Protection," are more conservative than the assigned protection factors in American National Standards Institute (ANSI) Z88.2, "American National Standard for Respiratory Protection." The TOC respirator program uses the more conservative assigned protection factors. Another example is when an activity could be considered either a construction activity or an operations/maintenance activity. In this case, the TOC safety or industrial hygiene subject matter expert will determine the more conservative governing standard from 29 CFR 1926, "Safety and Health Regulations for Construction," or 29 CFR 1910, "Occupational Safety and Health Standards," that will be used to ensure worker safety. TOC implementing procedures comply with the following safety and health standards that apply to the hazards at the TOC workplace:

- 10 CFR 850, "Chronic Beryllium Disease Prevention Program"
- 29 CFR 1904.4 through 1904.11, 1904.29 through 1904.33; 1904.44, and 1904.46, "Recording and Reporting Occupational Injuries and Illnesses"
- 29 CFR 1910, "Occupational Safety and Health Standards," excluding 29 CFR 1910.1096, "Ionizing Radiation"
- 29 CFR 1926, "Safety and Health Regulations for Construction"
- American Conference of Governmental Industrial Hygienists (ACGIH), "Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices," (2016) (incorporated by reference, see 10 CFR 851.27) when the ACGIH Threshold Limit Values (TLV's) are lower (more protective) than permissible exposure limits in 29 CFR 1910 (when the ACGIH TLV's are used as exposure limits, the TOC complies with the other provisions of any applicable expanded health standard found in 29-CFR 1910)
- American National Standards Institute (ANSI) Z88.2, "American National Standard for Respiratory Protection," (2015) (incorporated by reference, see 10 CFR 851.27)
- ANSI Z136.1, "Safe Use of Lasers," (2014) (incorporated by reference, see 10 CFR 851.27)
- ANSI Z49.1, "Safety in Welding, Cutting and Allied Processes," sections 4.3 and E4.3 (2012) (incorporated by reference, see 10 CFR 851.27)
- DOE-STD-1066-2012, "Fire Protection," (incorporated by reference, see DOE O 420.1C, Attachment 4, Section 1.e.[3]).

[1] ACGIH ® (American Conference of Governmental Industrial Hygienists) and TLV ® (Threshold Limit Value) are registered trademarks of the American Conference of Governmental Industrial Hygienists.

- International Building Code (IBC) (incorporated by reference, see MGT-ENG-IP-05, Rev. 3, Section 5.2.1.b).

- National Fire Protection Association (NFPA) 1, "Fire Code", (incorporated by reference, see MGT-ENG-IP-05, Rev. 3, Section 5.2.1.b).

- NFPA 45, "Standard for Fire Protection For Laboratories Using Chemicals," (incorporated by reference, see MGT-ENG-IP-05, Rev. 3, Section 5.2.1.b).

- NFPA 70, "National Electrical Code[2®]," (2017) (incorporated by reference, see 10 CFR 851.27). Effective August 44, 2016 electrical designs will follow NFPA 70® (2017)[3].

- NFPA 70E, "Standard for Electrical Safety in the Workplace®," (2015/2018) (incorporated by reference, see 10 CFR 851.27 and NFPA 70E® (2015/2018) in accordance with the provisions of Contract No. DE-AC27-08RV14800 Modification 036 and subsequent written direction from DOE).

- NFPA 101, "Life Safety Code", (incorporated by reference, see MGT-ENG-IP-05, Rev. 3, Section 5.2.1.b).

- NFPA 400, "Hazardous Materials Code", (incorporated by reference, see MGT-ENG-IP-05, Rev. 3, Section 5.2.1.b).

  There are some referenced safety and health standards that do not apply because the type of work is not performed or the hazard is not present at the TOC managed locations. The safety and health standards that do not apply are:

  - 29 CFR 1915, "Shipyard Employment."
  - 29 CFR 1917, "Marine Terminals."
  - 29 CFR 1918, "Safety and Health Regulations for Longshoring."
  - 29 CFR 1928, "Occupational Safety and Health Standards for Agriculture."

6.0 SAFETY AND HEALTH FUNCTIONAL AREAS

(10.1.12)

The TOC uses a structured approach to worker safety and health, which includes provisions for the applicable functional areas. The applicable functional areas are construction safety, fire protection, pressure safety, industrial hygiene, occupational medicine, motor vehicle safety, and electrical safety. The rules' functional areas that not applicable to TOC include: explosives, firearms, biological safety, and nanotechnology along with workplace violence prevention are reserved sections.

6.1 Construction Safety

(10.1.12, 10.1.16)

The TOC safety program implements applicable requirements found in construction safety laws, codes, standards, regulations, and applicable portions of DOE orders relating to construction safety. The construction subcontractors are required to implement the TOC WSHP. The scope,

[2] National Electrical Code ® is a registered trademark of the National Fire Protection Association.
[3] NFPA 70E® is a registered trademark of the National Fire Protection Association.

technical complexity, and risk of the construction activity determines the applicable state and federal requirements, as well as the TOC safety procedures, work planning process, and field oversight required. These requirements are stipulated in construction subcontracts.

Implementation of the applicable requirements ensures:

- Construction subcontractors obtain all required permits prior to beginning work on a project and as needed during the project; construction permit, hotwork permit, road closure permit, electrical utility outage permit, planned impairment permit, occupancy permit.
- Construction subcontractors follow TOC safety procedures or submit equivalent safety procedures for TOC approval
- Required personnel, subcontractor designated representatives, and competent persons with their roles and responsibilities are assigned
- Hazard analysis for the identification of foreseeable and potential hazards (e.g., hazards revealed by supplemental site information) is performed prior to commencement of affected work
- Identification of protective measures to mitigate the hazards is documented in the manner required by applicable OSHA standards
- Construction workers and their supervisors acknowledge they are aware of the hazards and protective measures identified
- The consequences for failing to utilize protective measures is communicated
- Frequent and regular oversight inspections by the designated representatives are performed to identify and correct any instances of noncompliance with the project safety and health requirements
- Construction workers know the steps for identifying and reporting hazards not previously identified
- Construction subcontractors communicate newly identified hazards to affected workers and stop work in the affected areas until appropriate protective measures (e.g., warning signs, interim controls) are established.

6.2 Fire Protection

(10.1.12, 10.1.16, 10.1.35, 10.1.36, 10.1.39)

The fire protection program is a comprehensive program that ensures the TOC's commitment to the highest safety standards is met in all areas of fire protection. The TOC Fire Protection Program priorities are:

- Life Safety
- Protection of DOE property

- Preservation of the environment.

Life safety, property protection, and the environment will be protected by application of the requirements of DOE Standard 1066-2012, "Fire Protection," as implemented by MGT-ENG-IP-05, "ORP Fire Protection Program," and TFC-PLN-13, "Fire Protection Program."

Building life safety and egress shall be maintained in all TOC buildings, facilities, and Tank Farms by compliance with NFPA 101, "Life Safety Code." NFPA 101 applies to all buildings, facilities, and Tank Farms, new or existing.

The fire protection program meets the requirements for the best protected class of industrial risks, which includes:

- A reliable water supply of adequate capacity for fire suppression
- Fire alarm notification
- Fire resistive and/or non-combustible construction
- Automatic fire extinguishing systems
- Special hazards protection
- Trained fire protection engineer and maintenance staff
- A fully staffed, trained, and equipped fire department
- A means to summon the fire department in the event of a fire
- A means to notify and evacuate building occupants in the event of a fire
- Application of mandatory fire protection criteria in accordance with MGT-ENG-IP-05
- Providing designs for new, and modifications to, TOC owned and leased buildings to include:
  - Review and approval of all design media for new construction and modifications to existing facilities
  - Issuance of a construction permit following approval of all design media
  - Oversight of constructions projects through construction permits and on-sight reviews
  - Communication issues, concerns, and expectations to construction management
  - Development and/or approval of acceptance testing for new or modified fire protection systems

– Issuance of an occupancy permit upon successful completion of construction, acceptance testing, and receipt of approved as-built drawings.

The Hanford Fire Department is responsible for the permitting process, fire suppression, fire system inspection/testing/maintenance and repair activities, hazardous material (HAZMAT) response, emergency rescue, and emergency medical response. The TOC fire protection engineer(s) is deputized by the Hanford Fire Marshal's Office to act on behalf of the Hanford Fire Marshal.

6.3 Pressure Safety

(10.1.12, 10.1.15, 10.1.16, 10.1.24, 10.1.25)

The TOC has comprehensive engineering, design, operations, maintenance, inspection, and testing programs to address applicable national consensus codes, as well as state engineering codes and standards. This includes applicable ASME codes for pressure vessels, boilers, air receivers, and supporting piping systems. The TOC has established processes for qualifying and training engineering, operations, testing, inspection, and maintenance staff.

The TOC engineering policy requires engineering work be performed by qualified engineers under the direction of qualified engineering management. The TOC engineering management plan provides direction for using codes and standards, establishing specifications, designing and testing safety affecting designs prior to use. The TOC procedures describe selection and flow down of applicable codes to subcontractors (e.g., fabrication) via the procurement process.

The engineering process for developing and implementing engineering specifications uses a compliance matrix for the more complex processes or designs to demonstrate compliance with the codes and standards. For simple designs and minor modifications, the engineering process requires qualified, trained engineers to prepare the designs and design changes, a second qualified engineer to check the designs and design changes, and a qualified technical manager to approve the designs and design changes prior to release. These methods provide necessary technical control.

When national consensus codes are not applicable for new designs or major modification designs (because of pressure range, vessel geometry, use of special materials, etc.), the TOC implements measures to provide equivalent protection and ensure a level of safety greater than or equal to the level of protection afforded by the ASME or applicable state or local code. These measures include:

- Organizational peer review is documented for safety class/safety significant systems.
- Qualified personnel are used to perform examinations and inspections of materials, in-process fabrications, nondestructive tests, and acceptance tests. The TOC may delegate qualification examination activities to an independent certifying agency, but shall retain responsibility for conformance of the examination and its administration.
- Documentation, traceability, and accountability are maintained for each pressure vessel or system, including descriptions of design, pressure conditions, testing, inspection, operation, repair, and maintenance.

Procurement of general service equipment is controlled by the TOC's procurement of items process. When necessary, vendors are required to provide appropriate documentation on their

products. For small general service items (e.g., small air compressor) commercial quality products are selected without need for additional paper documentation. The level of documentation required is commensurate with the level of pressure hazard expected.

6.4 Industrial Hygiene

(10.1.1, 10.1.12, 10.1.20, 10.1.21, 10.1.22, 10.1.23)

The TOC implements a comprehensive industrial hygiene (IH) program. The program is documented in a hierarchy of implementing documents covering exposure assessment methods and selection of controls for chemical, biological, and physical hazards.

Each element of the program is managed by a subject matter expert and is implemented by field industrial hygienists working with the operations, maintenance, and construction management organizations to implement the program. A technical staff qualification process is used to ensure the IH staff members are professionally and technically qualified to manage and implement the IH program.

The foundation of the IH program is the exposure assessment strategy. The exposure assessment strategy is based on the AIHA publication, "A Strategy for Assessing and Managing Occupational Exposures." The strategy describes the methods used for initial or baseline surveys and periodic resurveys and/or exposure monitoring as appropriate for work areas or operations to identify and evaluate potential worker health risks. Carcinogens are addressed in the exposure assessment strategy and a carcinogen control program is in place to mitigate risk. Other regulated hazards have specific control programs (e.g., beryllium, noise, asbestos, lead). The TOC respiratory protection program covers control of radiological and non-radiological hazards when required. Only National Institute for Occupational Safety and Health-approved respirators are prescribed.

The IH program is integrated into other WRPS programs. Industrial Hygienists are involved in the planning and design processes, which allows for anticipation of health hazards in proposed facilities and operations and development of suitable controls. The IH program and procedures include coordination with occupational medical, environmental, health physics, and work planning professionals to ensure adequate identification and control of exposures.

6.5 Occupational Medicine

(10.1.12)

The TOC has an established comprehensive occupational medical qualification and monitoring program. The TOC program covers workers who work at a covered work place for more than 30 days in a 12-month period or are enrolled for any length of time in a required medical or exposure monitoring program.

Occupational medicine services are provided by HPMC. The SOMC is a prime contractor under DOE-RL and DOE-ORP has directed TOC to use the SOMC. The SOMC provides a qualified medical services director and licensed, registered, and certified staff to plan and implement medical services.

The type of worker health evaluations include:

- Initial baseline
- Periodic, hazard-based medical monitoring or qualification-based fitness for duty
- Diagnostic examinations to evaluate employee's injuries and illnesses

- Return to work
- Separation, if the exam is accepted by the employee.

An administrative interface agreement between the TOC and the site occupational medical provider explains the responsibilities for implementing requirements. The requirement topics are paraphrased below and include:

- Exchange of health, hazard, and personnel information between the TOC, SOMC, and employees
- Information and opportunities to participate in worker protection teams
- Access to current employee job task analysis, hazard information, and the workplace
- Notification of employee absences because of an injury or illness for more than five consecutive workdays (or equivalent for alternative schedules)
- Record keeping and access to records
- Determination of worker health evaluation content
- Monitoring of ill and injured employees
- Determination and notification of work restrictions
- Measures to identify and manage the principal preventable causes of premature morbidity and mortality affecting worker health and productivity
- Employee assistance and wellness programs
- Emergency response
- Immunizations, blood-borne pathogens, and other programs.

6.6 Motor Vehicle Safety
(10.1.12)

The TOC has an established motor vehicle safety program. The motor vehicle safety program is implemented to protect the safety and health of drivers and passengers in all government–owned or government-leased motor vehicles and powered industrial equipment. The program is tailored to on-site equipment through an annual inventory by property management personnel. Each manager that uses motor vehicles or powered industrial equipment submits a justification of need for each item during the annual inventory.

The motor vehicle safety program addresses:

- Minimum licensing requirements for operators as required by the state of Washington including medical qualification to the Department of Transportation standard as appropriate for the equipment used
- The use of seat belts and safety devices

- The requirement for training and certification for specialty vehicle operators including shipping and handling hazardous waste
- The requirements for inspection and maintenance of vehicles and powered industrial equipment
- Awareness campaigns and incentive programs to encourage safe driving.

Hanford Site traffic and pedestrian control devices, road signs, on-site speed limits and traffic rules are maintained by MSA in accordance with the Manual on Uniform Traffic Control Devices for Streets and Highways, U.S. Department of Transportation, Federal Highway Administration. Enforcement of these requirements is incorporated in the TOC Standards of Conduct and managed through levels of progressive disciplinary action. The Benton County Sheriff's Department enforces those aspects of the requirements that are also Washington state law.

6.7 Electrical Safety

(10.1.12, 10.1.19, 10.1.31)

The TOC Electrical Safety Program (ESP) is the process in which electrical safety codes and standards are implemented at TOC facilities.

The electrical safety program provides for the safeguarding of persons and property from hazards arising from the use of electricity in the workplace. The program is based on a determination of risk associated with the level of electrical hazards that may be present in the work environment. The electrical safety program has approved procedures, which include:

- Roles and responsibilities for electrical safety
- Electrical safety training requirements
- Electrical equipment and approval
- National Electrical Code® (NEC) compliance inspections
- Requirement specifications for safe electrical installations and modifications
- Equipment grounding
- Personal Protective Equipment (PPE) selection, use, and maintenance
- Controls for allowing access within designated approach boundaries
- Control of hazardous electrical energy (lockout/tagout)
- Control of energized electrical work
- Knowledge, Skills, and Abilities Checklist.

The Washington River Protection Solutions Authority Having Jurisdiction (WRPS AHJ) and Electrical Safety Program Administrator (WRPS ESPA) work in conjunction to facilitate the TOC ESP. The WRPS AHJ is the final decision authority for all electrical matters.

The WRPS AHJ represents the DOE-AHJ and is the WRPS authority for enforcing and interpreting the Hanford Site Electrical Safety Program (DOE-0359), National Electrical Safety Code® (NFPA 70), the Standard for Electrical Safety in the Workplace® (NFPA 70E), Subpart S of 29 CFR 1910, and Subpart K of 29 CFR 1926, Washington Administrative Code (WAC) Title 296, Revised Code of Washington (RCW) 19.28 and 19.29.

In a prolong absence of the WRPS AHJ the Washington River Protection Solutions Deputy Authority Having Jurisdiction (WRPS DAHJ) for electrical matters can issue approvals and interpretations for the AHJ.

The WRPS ESPA administers the WRPS ESP and serves as the Subject Matter Expert (SME) for the Hanford Site Electrical Safety Program (DOE-0359), the Standard for Electrical Safety in the Workplace® (NFPA 70E), Subpart S of 29 CFR 1910, and Subpart K of 29 CFR 1926.

6.8 Hoisting and Rigging Safety

The TOC Hoisting and Rigging Safety program is the process is which Hoisting and Rigging standards are implemented at TOC facilities.

The hoisting and rigging safety program provides for the safeguarding of persons and property from hazards arising from the operation of hoisting and rigging equipment in the workplace. The program is based on a determination of risk associated with the level of hoisting and rigging hazards that may be present in the work location. The hoisting and rigging safety program has approved procedures and RPP documents which include:

- Roles and responsibilities
- Training requirements
- Hoisting and rigging equipment approval
- Provide Critical or Special Lift Determination
- Hoisting and Rigging Committee Charter
- Crane Travel Path and Set-up Evaluation
- Powered Industrial Trucks
- Control of Dome Loading and SSC Load Control
- Vehicle and Dome Load Control in Tank Farm Facilities
- Soil Bering Capacity for Crane Loads
- Lifting Attachment & Lifted Item Evaluation
- Simplified Lifting Bails Evaluation Process
- Standard Lifting Point Rated Load Capacities.

The hoisting and rigging engineering subject matter experts (SME) reside within the engineering department. The hoisting and rigging safety SME resides within the safety programs group. The hoisting and rigging engineering SME and hoisting and rigging safety SME work in conjunction to facilitate the TOC Hoisting and Rigging program.

The hoisting and rigging engineering SME's are responsible for enforcing and interpreting the Hanford Site Hoisting and Rigging manual (DOE/RL 92-36), ASME B30 series, 29 CFR 1910 Occupational Safety and Health Standards, 29 CFR 1926 Safety and Health Regulations for Construction, and RCW requirements.

The hoisting and rigging safety SME provides oversite for the hoisting and rigging program implementation. The hoisting and rigging safety SME ensures that DOE-92/36 is properly implemented by being a collaborative authority with the engineering interpretive authority for the Hanford Site Hoisting and Rigging manual (DOE/RL 92-36), ASME B30 series, 29 CFR 1910 Occupational Safety and Health Standards, and 29 CFR 1926 Safety and Health Regulations for Construction.

7.0 TRAINING AND INFORMATION
(10.1.13)

The TOC has established a worker safety and health training and information program within a training and qualification plan. Management, with input from safety and health professionals, uses standard training profiles, coupled with the employee job task analyses in determining:

- Training requirements based on hazards in the workplace
- Tasks the employees will perform
- Requirements based on worker classification (e.g., field work supervisors, radiological worker)
- Technical staff position qualifications (e.g., system engineer, quality assurance engineer, operations engineer).

The training organization and management, use a web-based electronic integrated training matrix to track and ensure that all workers exposed or potentially exposed to hazards are provided with the training and information on that hazard in order to perform their duties in a safe and healthful manner. The program provides training and information for new workers, before or at the time of initial assignment to a job involving exposure to a hazard. Periodic training is provided as often as necessary to ensure that workers are adequately trained and informed. Additional training is provided when safety and health information or a change in workplace conditions indicates that a new or increased hazard exists.

TOC provides company-specific training and utilizes MSA's HAMMER Federal Training Center for Hanford Site and specialty training.

The TOC has established a technical staff qualification plan to ensure training and information is provided to employees who have worker safety and health program responsibilities that is necessary for them to carry out those responsibilities.

8.0 RECORDKEEPING AND REPORTING
(10.1.14)

The TOC has processes and procedures for establishing and maintaining complete and accurate records. The processes include hazard inventory information, hazard assessments, exposure measurements, and exposure controls. The hazard inventory is the compilation of information, materials and documents generated during hazard identification activities described in Section 3.0.

8.1 Occupational Injury and Illness Recordkeeping and Reporting
(10.1.14, 10.1.33, 10.1.34)

The TOC has an established procedure to ensure job-related injuries and illnesses are recorded, reported, and maintained in accordance with OSHA, DOE, State of Washington Labor and Industries, and company requirements and expectations. In accordance with guidelines presented in 29 CFR 1904, a record of OSHA recordable injuries and illnesses involving employees (and daily managed subcontract employees) is maintained and reported annually (Injury Log, Form O.M.B. No. 1220-0029). The procedure requires records are accurate, factual, complete, and that employee confidentiality is maintained. The protocol does not allow anyone to conceal nor

destroy any information concerning non-compliance or potential noncompliance with the requirements.

A case management coordinator performs case classification and recording, to oversee case management for both OSHA and Workers Compensation, and to interface with the site occupational medical provider, private physicians, worker's compensation DOE Third Party Insurance Administrators for Workers Compensation, the affected employee and his/her supervisor. The coordinator:

- Provides coordination, policy, and direction in the management of injuries and illnesses, and supporting management in its efforts to assist their employees to recover and return to work promptly
- Reviews reports of occupational injuries and illness and compiles, analyzes, and tracks relevant causative factor information
- Tracks and trends workplace injuries and illnesses
- Maintains appropriate injury/illness records in accordance with company procedures and applicable regulations
- Participates in investigations/incidents and providing specialized safety knowledge and skills
- Provides workers compensation company oversight of injuries/illnesses, and assists workers with claim processes, procedures and documentation
- Maintains the OSHA case files for all workplace injuries and illnesses
- Updates DOE Hanford Site and DOE-HQ injury/illness databases as required.

8.2 Exposure Monitoring Data

(10.1.12, 10.1.20)

Exposure monitoring records are maintained in the industrial hygiene database and includes the following information:

- Exposure levels
- The date(s), number, duration, location and results of each of the samples taken, including a description of the sampling procedure used to determine representative employee exposure where applicable
- A description of the sampling and analytical methods used
- The exposure controls or PPE worn
- Employee identification, job classification, and similarly exposed group, if applicable, for other employees whose exposure the measurement is intended to represent
- The environmental variables that could affect the measurement of employee exposure.

For conditions where the TOC has determined that no monitoring is required, a record of the objective data relied on to support the determination that no employee is exposed at or above the occupational exposure action level is maintained.

8.3 Hazard Analysis
(10.1.9, 10.1.26)

Hazard analyses, described in Section 3.1, records are contained as record copies mainly in IDMS. Some hazard analyses are maintained in other record qualified databases such as: Confined Space and Roof Inspections.

9.0 TERMS AND DEFINITIONS
(10.1.3)

Affected worker. A worker who would be affected by the granting or denial of a variance, or any authorized representative of the worker, such as a collective bargaining agent.

Closure facility. A facility that is non-operational and is, or is expected to be permanently closed and/or demolished, or title to which is expected to be transferred to another entity for reuse.

Closure facility hazard. A facility-related condition within a closure facility involving deviations from the technical requirements of 10 CFR 851.23 of this part that would require costly and extensive structural/engineering modifications to be in compliance.

Construction. The combination of erection, installation, assembly, demolition, or fabrication activities involved to create a new facility or to alter, add to, rehabilitate, dismantle, or remove an existing facility. It also includes the alteration and repair (including dredging, excavating, and painting) of buildings, structures, or other real property, as well as any construction, demolition, and excavation activities conducted as part of environmental restoration or remediation efforts.

Construction contractor. The lowest tiered contractor with primary responsibility for the execution of all construction work described within a construction procurement or authorization document (e.g., construction contract, work order).

Contractor. Any entity, including affiliated entities, such as a parent corporation, under contract with DOE, or a subcontractor at any tier, that has responsibilities for performing work at a DOE site in furtherance of a DOE mission.

Maintenance and operations activity. Activity that is routine/recurring and is required to ensure the facility or operation is capable of fulfilling its function or mission (e.g., preventive maintenance or surveillance performed at a pre-determined interval). Decontamination, including washing, scrubbing, and scraping to remove contamination, and painting or other re-surfacing that is integral to decontamination activities are also considered part of maintenance and operations.

Site occupational medicine contractor. The designated site occupational medicine director or the individual providing medical services.

Pressure systems. All pressure vessels, and pressure sources including cryogenics, pneumatic, hydraulic, and vacuum. Vacuum systems should be considered pressure systems due to their potential for catastrophic failure due to backfill pressurization. Associated hardware (e.g., gauges

and regulators), fittings, piping, pumps, and pressure relief devices are also integral parts of the pressure system.

Safety and health standard. A standard that addresses a workplace hazard by establishing limits, requiring conditions, or prescribing the adoption or use of one or more practices, means, methods, operations, or processes, reasonably necessary or appropriate to provide safe and healthful workplaces.

Worker. An employee of a DOE contractor person who performs work in furtherance of a DOE mission at a covered workplace.

Workplace hazard. A physical, chemical, biological, or safety hazard with any potential to cause illness, injury, or death to a person.

10.0 SOURCES

10.1 Requirements

10 CFR 850, "Chronic Beryllium Disease Prevention Program."

10 CFR 851, "Worker Safety and Health Program."

10 CFR 851, "Worker Safety and Health Program," 10 CFR 851.3, "Definitions."

10 CFR 851, "Worker Safety and Health Program," 10 CFR 851.10, "General requirements."

10 CFR 851, "Worker Safety and Health Program," 10 CFR 851.11, "Development and approval of the worker safety and health program."

10 CFR 851, "Worker Safety and Health Program," 10 CFR 851.12, "Implementation."

10 CFR 851, "Worker Safety and Health Program," 10 CFR 851.13, "Compliance."

10 CFR 851, "Worker Safety and Health Program," 10 CFR 851.20, "Management responsibilities and worker rights and responsibilities."

10 CFR 851, "Worker Safety and Health Program," 10 CFR 851.21, "Hazard identification and assessment."

10 CFR 851, "Worker Safety and Health Program," 10 CFR 851.22, "Hazard prevention and abatement."

10 CFR 851, "Worker Safety and Health Program," 10 CFR 851.23, "Safety and health standards."

10 CFR 851, "Worker Safety and Health Program," 10 CFR 851.24. "Functional areas."

10 CFR 851, "Worker Safety and Health Program," 10 CFR 851.25, "Training and information."

10 CFR 851, "Worker Safety and Health Program," 10 CFR 851.26. "Recordkeeping and reporting."

10 CFR 851, "Worker Safety and Health Program," 10 CFR 851.27, "Reference sources."

10 CFR 851, "Worker Safety and Health Program," 10 CFR 851, Appendix A, "Worker Safety and Health Functional Areas."

29 CFR 1904.4 through 1904.11, 1904.29 through 1904.33; 1904.44, and 1904.46, "Recording and Reporting Occupational Injuries and Illnesses."

29 CFR 1910, "Occupational Safety and Health Standards," excluding 29 CFR 1910.1096, "Ionizing Radiation."

29 CFR 1926, "Safety and Health Regulations for Construction."

ACGIH®, "Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices," (2016) Incorporated by reference, (see 10 CFR 851.27) When the ACGIH Threshold Limit Values (TLV's) are lower (more protective) than permissible exposure limits in 29 CFR 1910 (when the ADGIH TLV's are used as exposure limits, the TOC complies with the other provisions of any applicable expanded health standard found in 29 CFR 1910).

ANSI Z49.1, "Safety in Welding, Cutting and Allied Processes," sections 4.3 and E4.3 (2012) (incorporated by reference, see 10 CFR 851.27).

ANSI Z88.2, "American National Standard for Respiratory Protection," (2015) (incorporated by reference, see 10 CFR 851.27).

ANSI Z136.1, "Safe Use of Lasers," (2014) (incorporated by reference, see 10 CFR 851.27).

ASME, "Boilers and Pressure Vessel Code," sections I through XII including applicable Code Cases, (2015).

ASME B31, "Code for Pressure Piping."

DEAR 970.5223-1, "Integration of Environment, Safety, and Health into Work Planning and Execution" (ISMS).

DOE-0336, "Hanford Site Lockout/Tagout Procedure."

DOE-0343, "Hanford Site Stop Work Procedure."

DOE-0344, "Hanford Site Excavating, Trenching and Shoring Procedure."

DOE-0346, "Hanford Site Fall Protection Program."

DOE-0359, "Hanford Site Electrical Safety Program."

DOE-0360, "Hanford Site Confined Space Procedure."

DOE M 231.1-1A, Chg 2, "Environment, Safety and Health Reporting Manual," June 12, 2007.

DOE O 231.1B, "Environment, Safety and Health Reporting," June 27, 2011.

DOE O 420.1C, "Facility Safety," 2015.

DOE STD 1066-2012, "Fire Protection."

DOE/RL-92-36, "Hanford Site Hoisting and Rigging Manual."

MGT-ENG-IP-05, "ORP Fire Protection Program," 2016.

National Fire Protection Association (NFPA) 70, "National Electrical Code®," (2005) (incorporated by reference, see 10 CFR 851.27 and NFPA 70 (2017) in accordance with the provisions of Contract No. DE-AC27-08RV14800 Modification 244.

NFPA 70E®, "Standard for Electrical Safety in the Workplace®," (2015/2018) (incorporated by reference, see 10 CFR 851.27 and NFPA 70E (2015/2018) in accordance with the provisions of Contract No. DE-AC27-08RV14800 Modification 244 and subsequent written direction from DOE).

TFC-PLN-05, "Conduct of Operations Implementation Plan."

TFC-PLN-13, "Fire Protection Program."

10.2 References

"DOE Voluntary Protection Program Manuals," (VPP) Volume I-IV.

TFC-ESHQ-S_SAF-CD-11, "Worker Safety and Health Program Requirements Implementation Matrix."

TFC-PLN-32, "Tank Operations Contractor Safety Management Programs."

TFC-PLN-41, "Integrated Safety Management System Description."

TFC-PLN-43, "Treatment, Storage, and Disposal Facility Hazardous Waste Operations."

TFC-PLN-100, "Tank Operations Contractor Requirements Basis Documents."